SPYDER Technology GNC AVA Development

Completed Technology Project (2017 - 2020)

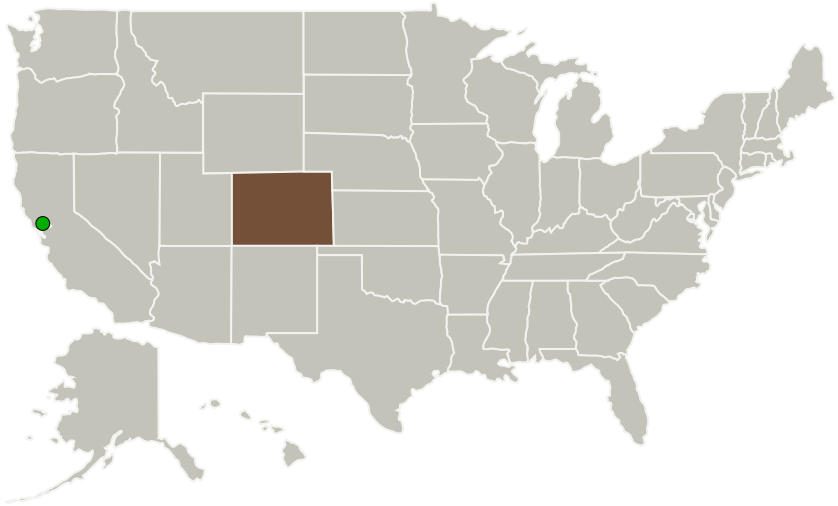
Project Introduction

Work is required to finish NASA's AVA system. Areas to be covered include: LV Simulations, AVA GNC Software, AVA hardware generation (4 units) and testing support which includes: Air Bearing testing at MSFC, Spyder 2 stage demo and Spyder 4 stage launch at WFF. This is our first step towards qualifying a larger ACS/AVA combination being designed for the Spyder orbital vehicle. The completion of this task will demonstrate a qualified GN&C for use on the Spyder launch vehicle.

Anticipated Benefits

The completion of this task will demonstrate a qualified GN&C (Guidance, Navigation & Control system) for use on the Spyder launch vehicle. UP Aerospace will commercially market Spyder launch and payload integration services worldwide. The design concept is scalable to larger payload lifting capability vehicles to meet market demands. These solicitations increase focus on collaborations with the commercial space sector that not only leverage emerging markets and capabilities to meet NASA's strategic goals, but also focus on industry needs. NASA's investments in industry partnerships can accelerate the availability of, and reduce costs for the development and infusion of, these emerging space system capabilities. While developing the technology to enable NASA's next generation of science and human exploration missions, we will grow the economy and strengthen the nation's economic competitiveness.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

UP Aerospace, Inc

Responsible Program:

Flight Opportunities

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Organizations Performing Work	Role	Type	Location
UP Aerospace, Inc	Lead Organization	Industry	Highlands Ranch, Colorado
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
Colorado

Project Transitions

October 2017: Project Start

September 2020: Closed out

Closeout Summary: Integrating Affordable Vehicle Avionics (AVA), under development at NASA-ARC, into UP Aerospace's developmental *Spyder* launch vehicle, including launch vehicle simulations, AVA GNC software, AVA hardware, and testing a support launch at the Wallops Flight Facility. Design was successfully tested on an UP Aerospace SpaceLoft (SL-14) flight in November of 2019 and is now in commercial use, licensed to a commercial provider.

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

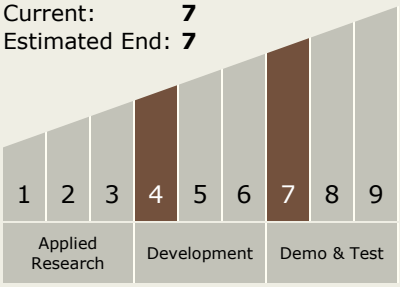
Program Director:
Christopher E Baker

Program Manager:
John W Kelly

Principal Investigator:
Bruce A Lee

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



Target Destination

Earth